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**Ferromagnetism in a Porphyrin-based Organic Semiconductor** J. MORENO, M.A. MAJIDI, W.A. SCHWALM, University of North Dakota, R.S. FISHMAN, Oak Ridge National Lab — Current efforts in growing supramolecular quasi two-dimensional magnetic organic semiconductors, such as porphyrin-based or bimetallic oxalates materials, have not been followed by close theoretical studies of their magnetic properties. Interplay between experimental and theoretical approaches is needed to increase their ferromagnetic transition temperatures, which are still quite low. Our aim is to contribute to the theoretical effort by studying a simplified model of a two-dimensional array of magnetic ions embedded in a porphyrin matrix. Since the distance between the local moments is very large their magnetic couplings are mediated by the metal-like extended pi-orbitals. Therefore, our approach is based on a Double-Exchange Hamiltonian with effective hopping between magnetic ions derived from Huckel model. We solve this model using the Dynamical Mean Field Approximation (DMFA) including several ions on the local site. In order to predict the optimal magnetic properties, we calculate the ferromagnetic transition temperature, magnetization and susceptibility for a range of parameters.

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